

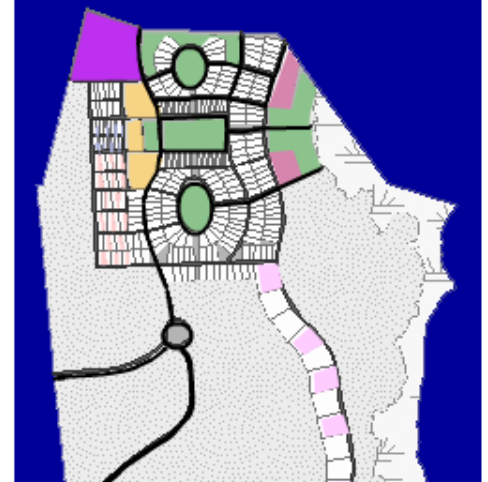
Alternatives for Coastal Development: One Site, Three Scenarios

What is the cost of development? How do you quantify a development's economic, environmental, and social impacts? While most people understand the benefits of developing with green space, scenic views, and other "natural" amenities, achieving the right balance between the natural and built environment can be a difficult task. This Web site illustrates three different development scenarios created for a residential area in coastal Georgia. Economic, environmental, and social indicators are calculated and compared for each scenario. This information will be useful to anyone (developers, citizens, local governments, etc.) interested in applying similar development design components in their communities.

This site features:

- Maps and details of three hypothetical design scenarios
 - ▶ Conventional Design: Point Peter Estates
 - ▶ Conservation Design: Point Peter Preserve
 - ▶ New Urbanist Design: Point Peter Villages
- Comparisons of environmental, economic, and social indicators across the three scenarios
- Selected 3-D views of each scenario
- A detailed project methodology describing process steps, technical steps, and useful software tools
- Background information and satellite images highlighting useful tools to support decisions on growth and development

One Site . . . Three Scenarios



Three design scenarios (requires [Flash® plug-in](#)).

Coastal organizations have indicated that educational tools are needed to help communities address these questions and make decisions about growth and development along the coast. Since most growth and land planning decisions are made at the local level, the NOAA Coastal Services Center works to provide tools, information, and technology to coastal resource managers positioned to help address local level decision making.

Conventional Design



Includes 857 single-family residential units on 815 lots and an additional 100 multifamily residential units.

Conservation Design



Includes 720 single-family residential units on 698 lots.

New Urbanist Design



Includes 867 single-family residential units on 867 lots and an additional 70 multifamily residential units.

- **Conventional Design** – The conventional scenario is designed to maximize the developable land and premium waterfront lots. This alternative includes relatively large lots and low traffic cul-de-sacs. Less emphasis is placed on protection of the natural resources or inclusion of civic spaces than in the other alternatives.
- **Conservation Design** – The conservation scenario makes its first priority preserving sensitive and valuable natural resources of the site, which include salt marshes, interior wetlands, and mature hardwoods. Focusing on the natural environment for its aesthetic, habitat, and recreation values, this alternative protects contiguous open space and clusters homes on smaller lots adjacent to natural areas. Conservation measures in this scenario exceed those that are required by law.
- **New Urbanist Design** – The new urbanist scenario focuses on compacting development in civic-oriented centers around a large central open space. The alternative is characterized by three distinct villages connected by road and trails, public civic spaces, and a mix of commercial and residential uses. While a natural resource inventory does not figure into the location of open space, this scenario does exceed legally required natural resource protection measures.

Indicator	Conventional	Conservation	New Urbanist	Description
<u>Cost to Develop Roads</u>	\$4,894,062 (\$5,113.96/DU*)	\$3,297,842 (\$4,580.34/DU*)	\$5,102,438 (\$5,445.50/DU*)	Total road cost in each scenario based on widths and lengths of streets and a standard cost per square foot.
<u>Cost to Develop Sewer</u>	\$2,162,780 (\$2,259.96/DU*)	\$1,858,892 (\$2,581.79/DU*)	\$1,995,763 (\$2,129.95/DU*)	Total sewer cost of sewers in each scenario based on length of pipe estimated from road layout and a standard cost per linear foot.
<u>Cost to Develop Water Lines</u>	\$1,853,811 (\$1,937.11/DU*)	\$1,593,336 (\$2,212.97/DU*)	\$1,710,654 (\$1,825.67/DU*)	Total water line cost in each scenario based on length of pipe estimated from road layout and a standard cost per linear foot.
<u>Cost to Develop Paths, Trails, and Sidewalks</u>	\$1,250,382 (\$1,306.56/DU*)	\$732,281 (\$1,017.06/DU*)	\$876,991 (\$935.96/DU*)	Total length of paths in each scenario based on length present and cost of surfacing. Note that different scenarios specify different surface types (concrete, asphalt, or mulch).
<u>Cost of Land Clearing</u>	\$697,801	\$292,222	\$344,068	Total clearing costs in each scenario based on varying amounts of land cleared for different lot sizes and types and a standard cost to clear per acre.
<u>Potential Net Revenue Estimate</u>	\$38,986,928	\$44,128,913	\$46,111,922	Considers cost and potential income variations across scenarios. See full calculations on the <u>net revenue calculation worksheet</u> .

*The cost to develop roads, sewers, water lines, and paths, trails, and sidewalks indicators are also reported relative to the total number of dwelling units (DU) in each scenario. More information on reporting results per dwelling unit is available in the [Scenario Dwelling Units](#) section.

Market Premiums Resources

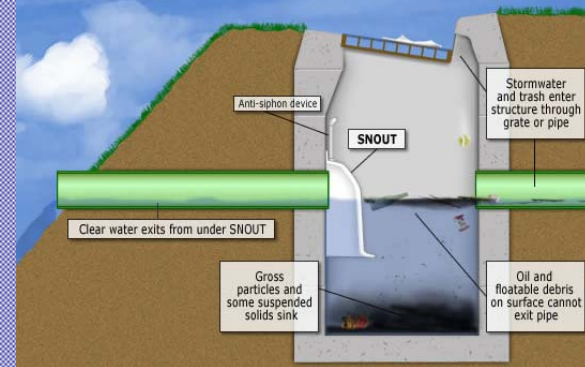
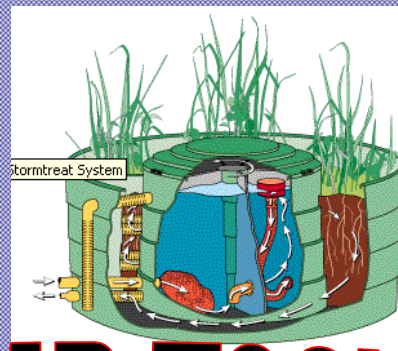
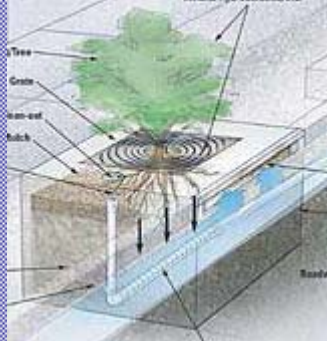
New Urbanism vs. Conventional

Source	Additional Percent of Home Value	Subdivision/Area
Weyerhaeuser Company, 1989. <i>The Value of Landscaping</i> . Weyerhaeuser Nursery Products Division. Tacoma, W.A. Referenced in Schueler, T. and H. Holland. 2000. <i>The Practice of Watershed Protection</i> . The Center for Watershed Protection.	15.0%	National Survey
Eppli, Mark S. and Charles Tu. 1999. <i>Valuing the New Urbanism: the impact of new urbanism on prices of single-family homes</i> . Washington, DC: Urban Land Institute.	4 - 25%	Kentlands, Harbor Town, Laguna West, Southern Village
Song, Yan and G. J. Knapp. 2002. <i>The Effects of New Urbanism on Housing Values: A Quantitative Assessment</i> . National Center for Smart Growth Research and Education. University of Maryland.	15.5%	Orenco Station Study

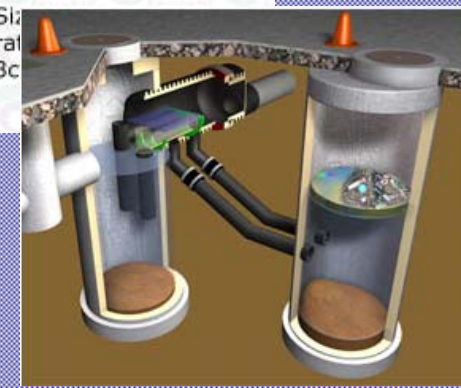
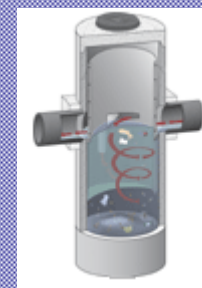
Conservation vs. Conventional

Source	Additional Percent of Home Value	Subdivision/Area
Smart Growth Network. 2000. <i>Sprawl Costs us All, Evidence from Maryland</i> .	33%	Pennypack Park (Philadelphia)
Smart Growth Network. 2000. <i>Sprawl Costs us All, Evidence from Maryland</i> .	20%	Rea Island Wildlife Refuge(North Carolina)
Lacey, Jeff. 1990. <i>An Examination of Market Appreciation for Clustered Housing with Permanent Open Space</i> . Center for Rural Massachusetts.	26%	Concord, MA
Lacey, Jeff. 1990. <i>An Examination of Market Appreciation for Clustered Housing with Permanent Open Space</i> . Center for Rural Massachusetts.	12%	Amherst, MA

Other Potential Costs and Benefits Not Calculated in Net Revenue, but May Be Significant	Conventional	Conservation	New Urbanist	Description
<i>Minus (-) dollars refers to costs, and plus (+) dollars refers to savings. The more dollar signs, the greater the estimated costs or savings.</i>				
Potential for Rapid Return on Developer Investment	0	+\$\$	+\$\$	Benefits to developer associated with highly marketable design.
Remediation Costs to Meet Environmental Water Quality Standards	-\$\$\$	0	-\$	Cost to developer for potential stormwater management requirements, dependent upon scenario designs.
Cost of Services Provided by Local Government	-\$\$	-\$ (due to clustering)	-\$ (due to clustering)	Other costs to local governments or public not borne by developer.
Insurance Burden of Number of Units in High Hazard Zone (% of total)	57%	45%	55%	Percent of total units located in high-risk flood zones as depicted on FEMA flood maps.



Stormwater BMP Technology Fair





International Stormwater Best Management Practices (BMP) Database

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Welcome to the International Stormwater Best Management Practices (BMP) Database project web site, which features technical documents, software and an extensive database developed over the past decade. The overall purpose of the project is to provide scientifically sound information to improve the design, selection and performance of BMPs. To accomplish this goal, the Project Team has developed tools to promote scientifically-based collection and management of the data needed to evaluate the effectiveness of stormwater runoff BMPs. These tools include standardized BMP monitoring and reporting protocols, a stormwater BMP database, BMP performance evaluation protocols, and BMP monitoring guidance. Continued population of the database and assessment of its data will ultimately lead to a better understanding of factors influencing BMP performance and help to promote improvements in BMP design, selection and implementation.

Project Sponsors



The project, which began in 1996 under a cooperative agreement between the American Society of Civil Engineers ([ASCE](#)) and the U.S. Environmental Protection Agency ([USEPA](#)), now has support and funding from a broad coalition of partners including the Water Environment Research Foundation ([WERF](#)), ASCE Environmental and Water Resources Institute ([EWRI](#)), USEPA, Federal Highway Administration ([FHWA](#)) and the American Public Works Association ([APWA](#)). [Wright Water Engineers, Inc.](#) and [GeoSyntec Consultants](#) are the entities maintaining and operating the database clearinghouse and web page, answering questions, conducting analyses of newly submitted BMP data, conducting updated performance evaluations of the overall data set, disseminating project findings, and expanding the database to include other approaches such as Low Impact Development techniques. The database itself is downloadable to any individual or organization that would like to conduct its own assessments.

On this web site, you can obtain:

NUMBER OF STUDIES IN THE INTERNATIONAL STORMWATER BMP DATABASE

[Return to Home Page](#)

International Stormwater BMP Database Summary Tables

Total Structural	171
Total Non-Structural	28
Total BMPs	199

Total Numbers of BMPs by Category

BMP CATEGORY	NUMBER OF BMPS
Structural	
Biofilter	32
Detention Basin	24
Hydrodynamic Device	17
Media Filter	30
Percolation Trench/Well	1
Porous Pavement	5
Retention Pond	33
Wetland Basin	15
Wetland Channel	14
Non-Structural	
Maintenance Practice	28

Coastal Training Program

North Inlet - Winyah Bay



North Inlet-Winyah Bay NERR
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Stormwater Education
Consortium**
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Jeff Pollack
CTP Coordinator

What is the CTP?

Background and Mission

The Coastal Training Program (CTP) is a nationwide initiative by the National Estuarine Research Reserve (NERR) system to provide science-based information, tools, and training to coastal decision makers in order to foster stewardship of coastal resources. A coastal decision maker is anyone whose professional or personal choices impact the health of coastal resources or habitats. Local planners, county council members, commercial and recreational fishermen, and developers are just a few examples.

Each of the 26 National Estuarine Research Reserves on US coasts has the opportunity to establish its own Coastal Training Program. Each CTP is required to follow conduct a series of steps of program development, including a market analysis of other area training providers, a needs assessment of the target audience, a CTP program strategy, and a CTP marketing plan. The North Inlet-Winyah Bay (NI-WB) National Estuarine Research Reserve began to implement its CTP in 2003, building upon six years of training experience in the form of Coastal Issues Workshops.

The Coastal Training Program has retained many of the best aspects of the Coastal Issues Workshops conducted at the reserve-- participatory learning-- but the inception of a comprehensive approach to local coastal training.

Please fill out
assessment forms.